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PROJECT REMEDIAL WORK PLAN INVESTIGATION OF SOIL AND GROUNDWATER CONTAMINATION AT THE SITES OF FORMER BUILDINGS 168 AND 169 EXCESSED LAND OF TRUMAN ANNEX NAS KEY WEST FL

7/1/1988

GERAGHTY AND MILLER INC

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PROJECT REMEDIAL WORK PLAN

INVESTIGATION OF SOIL AND GROUND-WATER CONTAMINATION AT THE SITES OF FORMER BUILDINGS 168 AND 169, NAVAL AIR STATION KEY WEST EXCESSED LAND OF TRUMAN ANNEX KEY WEST, FLORIDA

Prepared for

DEPARTMENT OF THE NAVY
Southern Division
Naval Facilities Engineering Command
Charleston, South Carolina

Contract No. N62467-87-C-0026
Project No. TO290TA01

July 1988

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INTRODUCTION

The Navy has reported to Geraghty & Miller, Inc., (G&M) that the Truman Annex Company purchased 103 acres of the Truman Annex, a parcel of the Naval Air Station Key West (NAS Key West) property in Key West, Florida (Figure 1), for redevelopment. During demolition of former Navy Buildings 168 and 169, (Figure 2) and subsequent regrading of the ground, a yellow discoloration of the soil was observed. Accordingly, the Truman Annex Company contracted Environmental Technology, Inc., (ET) (Richmond, Virginia) in October 1987 to analyze the soil. ET collected soil samples from depth intervals of 0 to 6 inches, 12 to 18 inches, and 24 to 30 inches. Chromium concentrations in some samples exceeded the Resource Conservation and Recovery Act (RCRA) maximum concentration level of 5 milligrams per liter (40 CFR 26.24) when analyzed by the Extraction Procedure Toxicity (EP Tox) method. Additionally, ET reported that the chromium concentrations in the soil samples having a yellow color were generally higher than soils that were not discolored.

Because of the outcome of the ET sampling and analysis program, Truman Annex Company excavated the discolored soils at the sites of Buildings 168 and 169. The excavated soils, which were present at depths of up to 7 feet (ft) reportedly are being properly transported and disposed of as a hazardous

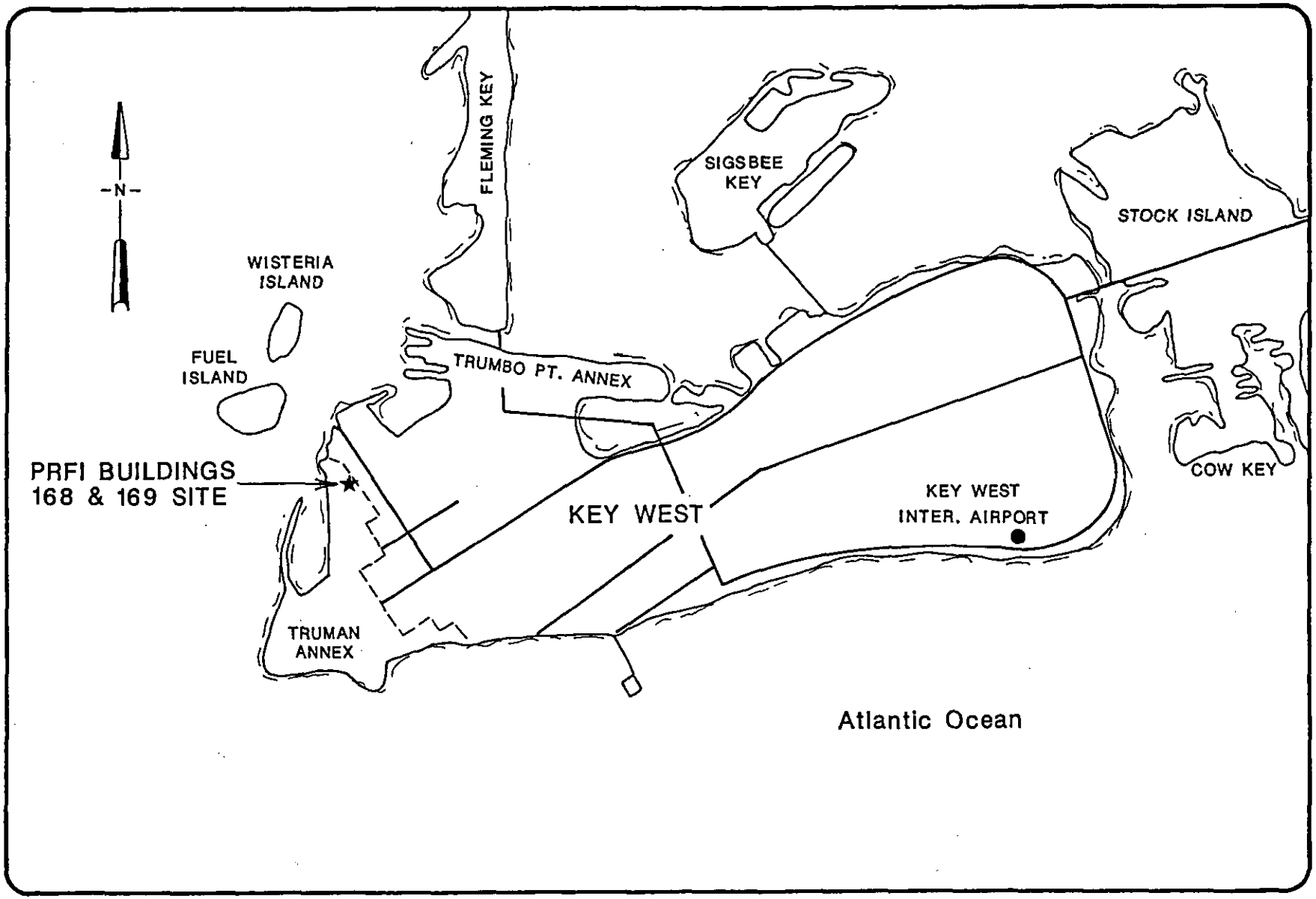

Figure 1.

Location of PRFI Site at Truman Annex.

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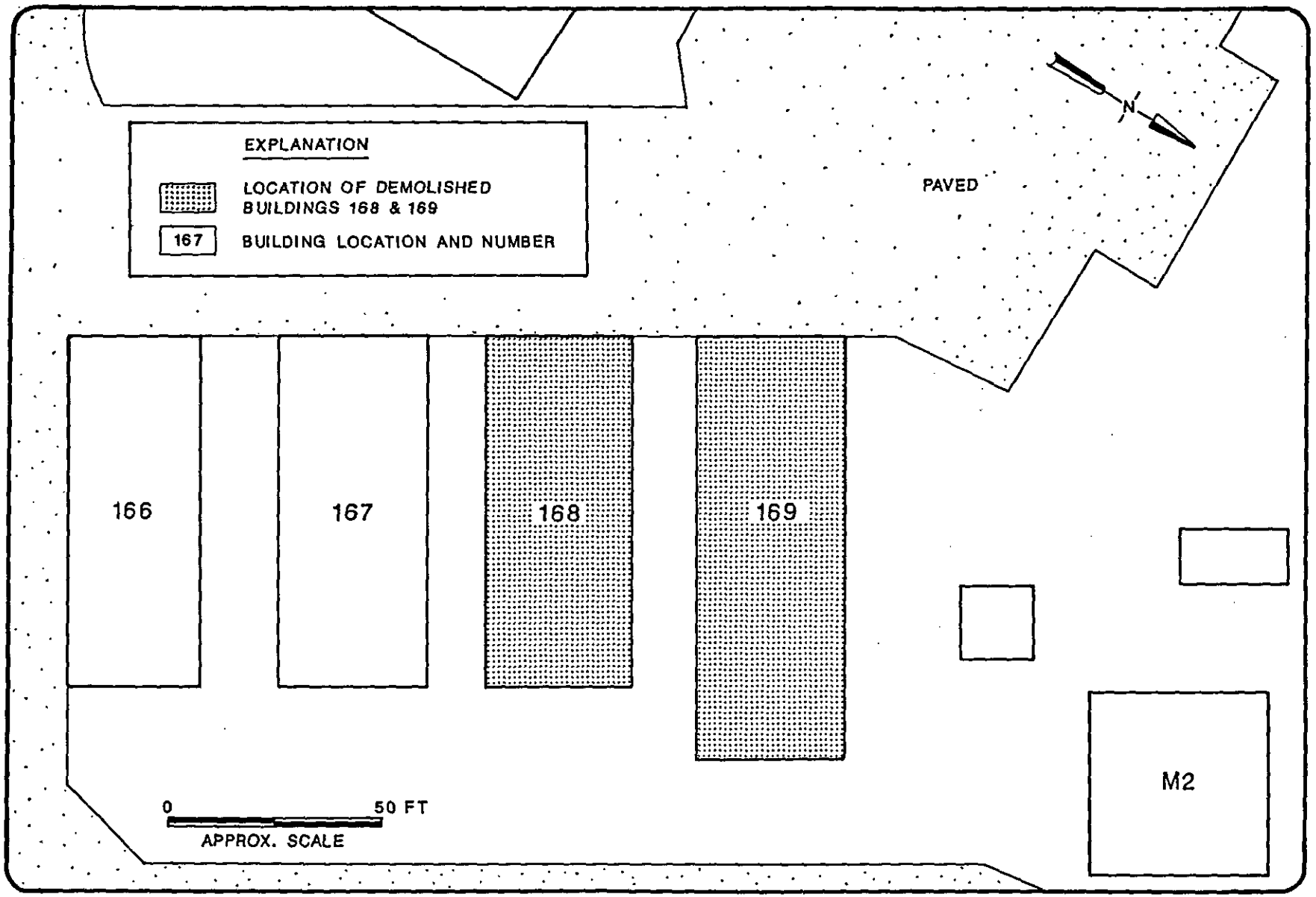

Figure 2.

Location of Building 168 and 169 PRFI Sites at Truman Annex.

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material at an U.S. Environmental Protection Agency (EPA) approved landfill.

The Navy has contracted G&M to conduct a Project Remedial Field Investigation (PRFI) to evaluate the completeness of the excavation of chromium-contaminated soils. This program will consist of a site survey, monitor-well installation, and soil and ground-water sampling. The following PRFI work plan will outline in detail how this program will be conducted.

PROJECT REMEDIAL FIELD INVESTIGATION

Site Survey

Prior to initiating the field work, a site visit will be conducted and available engineering and as-built drawings of underground utilities around the site will be examined. The exact locations of the monitor wells and soil sampling sites proposed in Figure 3 will be determined in the field.

Monitor-Well Installation

The monitor-well network will consist of four monitor wells installed to a depth of about 15 ft. Monitor-well installation will be accomplished using the hollow-stem auger drilling method; however, to ensure that no shallow underground utilities are encountered during drilling, each borehole will be hand dug to approximately 4 ft. Once the augers have penetrated to the desired depth, a monitor well consisting of a 10-ft long, 2-inch-diameter, 0.010-inch slotted PVC well screen topped by a 7-ft-long, 2-inch-diameter PVC riser will be inserted into the hollow-auger flights. Silica sand (20/30 sieve size) will be gravity fed to a height of about 1.5 ft above the top of the well screen and topped by about 0.5 ft of fine sand. A neat cement seal then will be placed on top of the sand pack to prevent infiltration of surface water into the well. The wells will be fitted with locking caps, and a protective manhole cover will be installed into the cement seal to protect the well

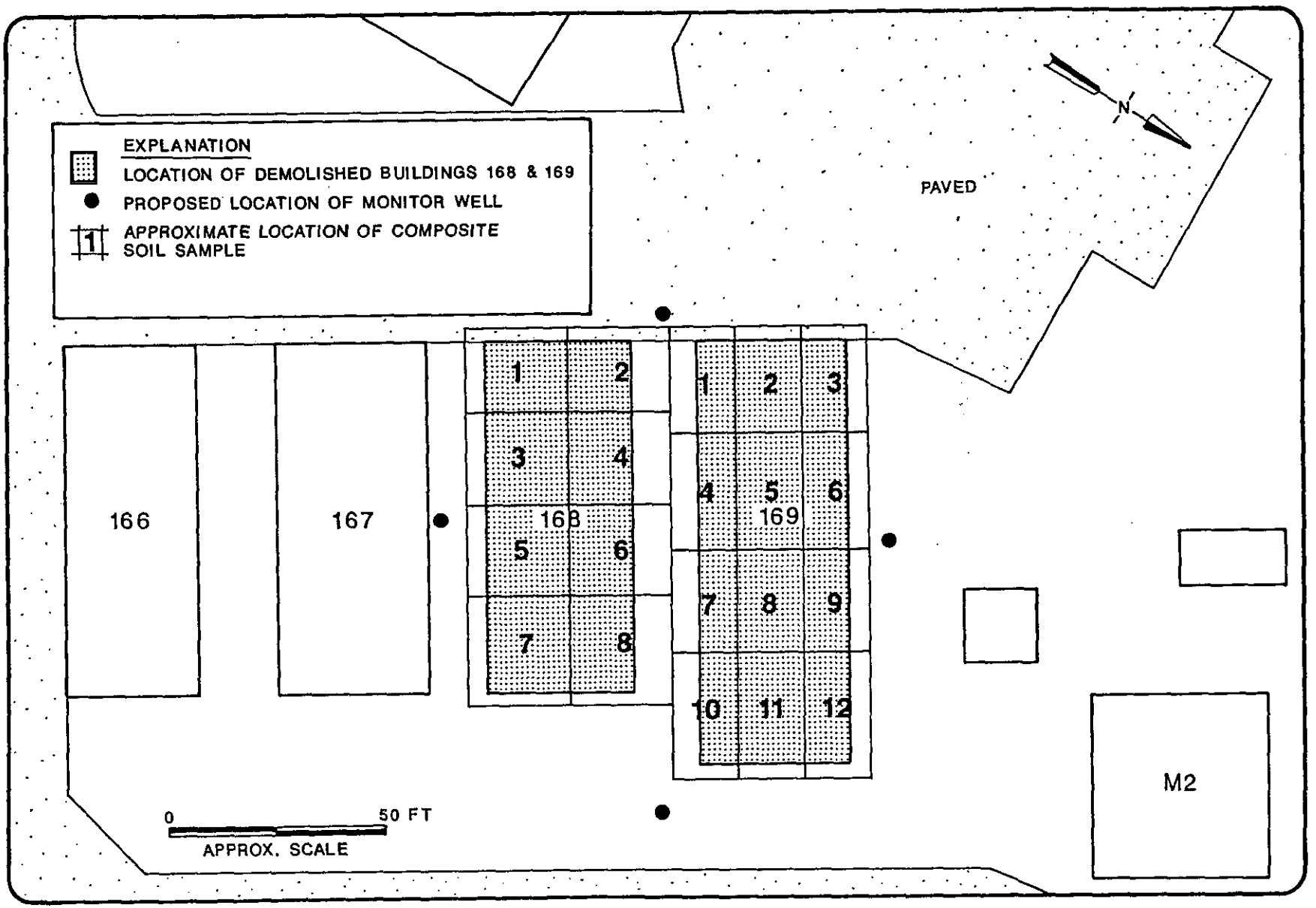

Figure 3.

Proposed Locations of Monitor Wells and Soil Samples at the PRFI Site.

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from vandalism and vehicular traffic. A well-construction diagram is shown in Figure 4. The wells will be developed by alternately hand swabbing and pumping until a sand-free discharge is obtained. Development water will be containerized for disposal at the NAS-Key West. Continuous split-spoon samples will be collected while drilling the borehole for the first monitor well to determine the general lithology. Auger cuttings from the remaining boreholes will be logged and observed for the presence of discoloration.

These monitor wells do not intercept the full extent of the aquifer. However, representtive ground-water samples can be collected from the monitor wells because of the behavior and transport of chromium in ground water. Specifically, concentrations of chromium in the soil collected from the site as reported by ET were in milligrams per liter. These levels are not high enough to produce a solution of chromium in the ground water with a density distinguishable from that of ambient ground water. Therefore, any dissolved chromium will be transported with associated ground water regardless of the location in the aquifer.

The tops of the PVC casings of the wells will be surveyed by a licensed land surveyor and referenced to a common datum, mean sea level. Water levels will be measured in the wells and converted to elevations using this datum so that the direction of shallow ground-water flow can be

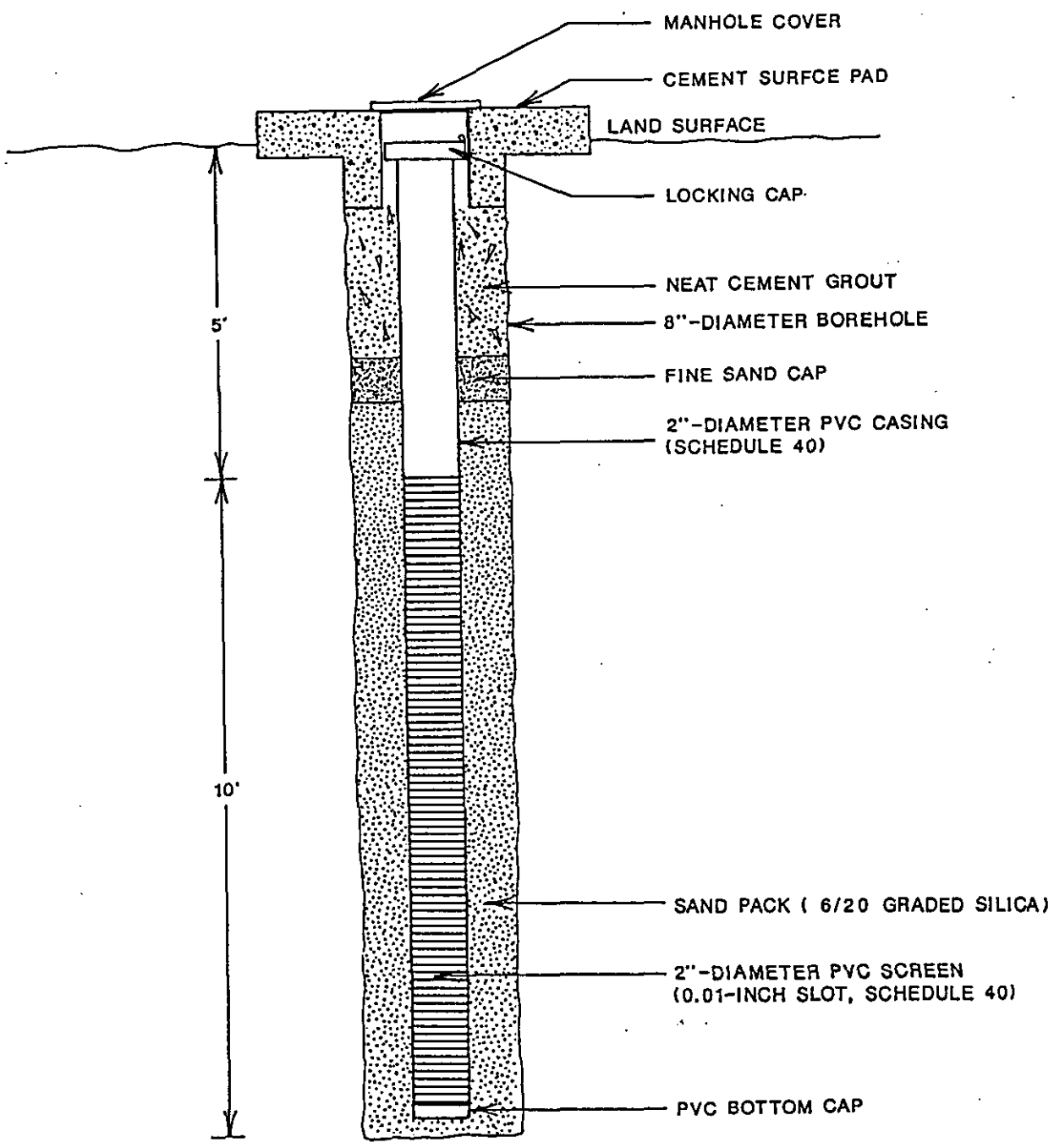

Figure 4.

Construction Diagram of Monitor Wells.

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estimated. Prior to collecting water-level measurements, the well caps will be removed so that static conditions are represented.

Soil Sampling

As discussed previously, the soil has been excavated down to depths ranging from about 0.5 to 7 ft. The soil sampling program will be performed to evaluate whether excavation of this soil is complete. Approximately 20 soil samples will be collected from the surface of excavated and adjacent areas. One composite sample composed of three subsamples will be collected from each of the gridded areas and designated according to the grid number as shown in Figure 3. Exact locations of the subsamples will be determined in the field; however, whenever possible, samples will be collected from discolored areas of soil. It is anticipated that sampling depths will range from 0.5 to 8 ft below land surface depending on the depths to which the soils have been excavated. Two composite soil samples made up of three subsamples will be collected off-site from two areas assumed to be uncontaminated and of approximately the same surface area as the above grids. These samples will be used to evaluate background levels of chromium at a location determined in the field but no more than about 100 ft from the study site (Figure 5). The FDER will be notified five working days before initiating collection of soil samples.

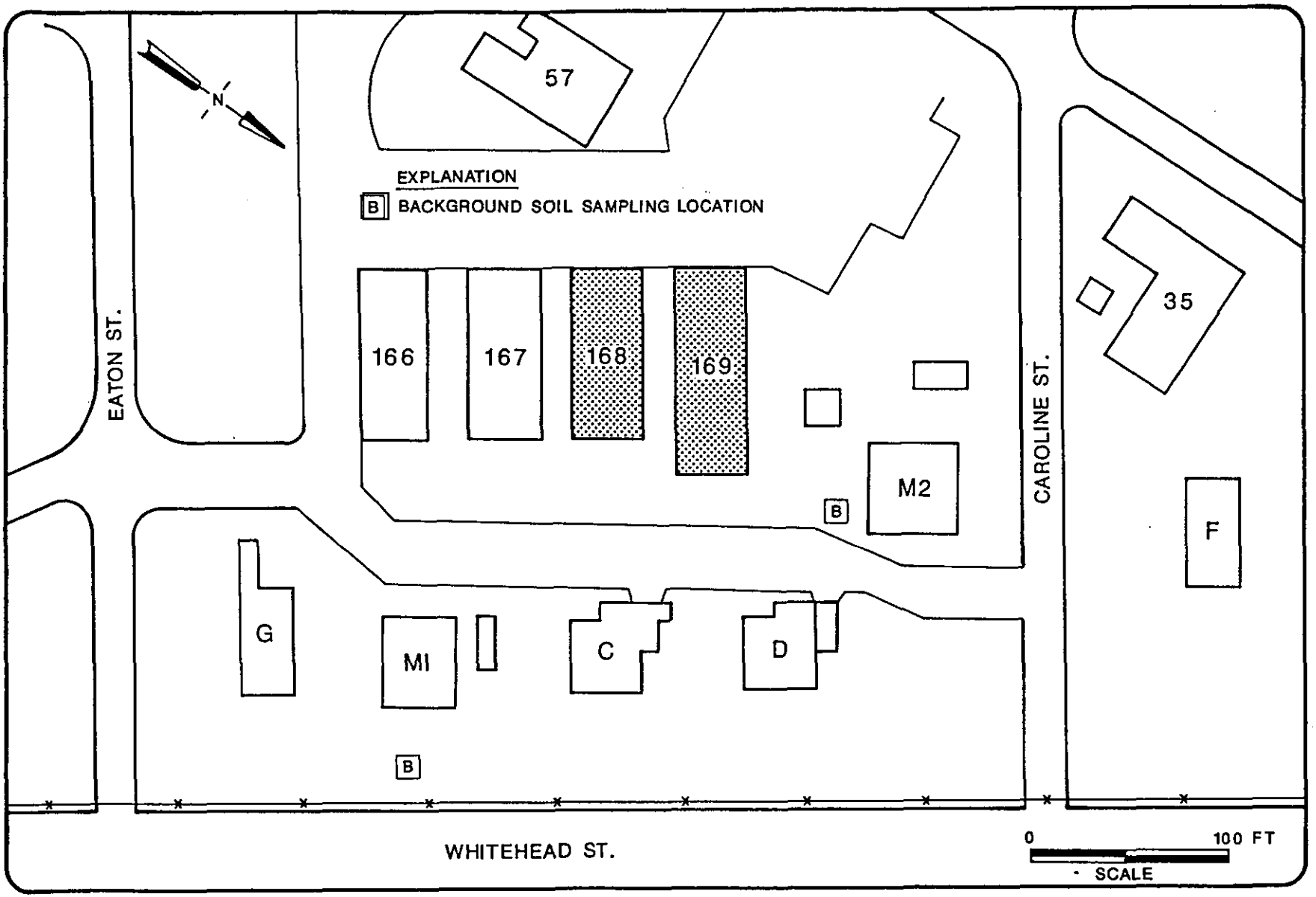

Figure 5.

Proposed Location of Background Soil Samples in the Vicinity of the PRFI Site.

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All soil samples will be shipped via overnight delivery to Pioneer Laboratory, Inc., (a Florida Department of Environmental Regulation [FDER] approved laboratory), in Pensacola, Florida for analysis. The samples will be analyzed for pH and by EP Tox for chromium.

Ground-Water Sampling

Ground-water samples will be collected from each of the newly installed monitor wells. The samples then will be sent to Pioneer Laboratory to be analyzed for chloride (EPA Method 325.1), total dissolved solids, total chromium (EPA Method 218.1), and hexavalent chromium (EPA Method 218.5). The specific conductance and pH of each sample will be determined in the field. The FDER will be notified five working days before initiation of ground-water sampling.

REPORT PREPARATION

The data collected during the field investigation will be assimilated and analyzed, and a PRFI report will be prepared describing the work performed and the results of the investigation. Also included will be an evaluation of the degree of residual chromium contamination at the site and recommendations regarding whether or not additional remediation will be needed. If necessary, the report also will include a risk assessment to determine the risk posed to public health and/or the environment by chromium, if found. The comprehensiveness of the risk assessment will depend on the findings of the field investigation and governmental regulatory agency concerns. The report will be submitted to the Navy in draft form for review and comment. Upon receipt of comments, the report will be finalized and submitted to the FDER.

IMPLEMENTATION SCHEDULE

The PRFI will be initiated about two weeks after approval of the PRFI Work Plan by regulatory agencies and will be completed within one week barring any unforeseen circumstances. The PRFI report will be sent to the Navy about two weeks after receipt of the results of the water and soil analyses for samples collected during the PRFI.